

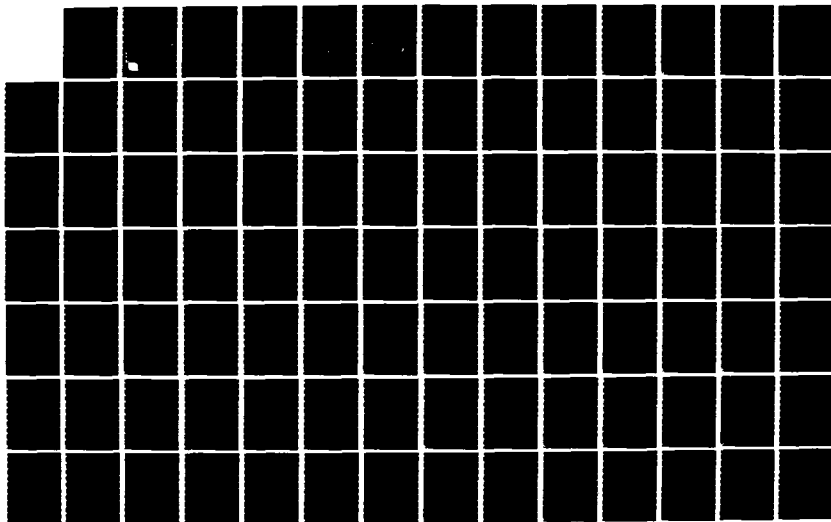
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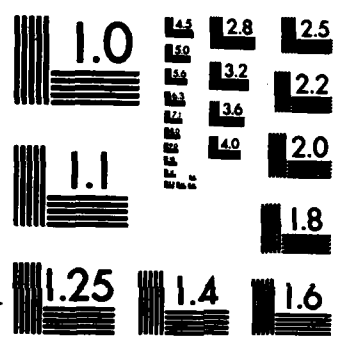
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*Compiled by*  
**Anthea M. DeV Vaughan**

**August 1983**

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**Office of the Under Secretary of Defense for Research and Engineering  
and  
Office of the Assistant Secretary of Defense  
(Manpower, Reserve Affairs and Logistics)**

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REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER	2. GOVT ACCESSION NO. AD-A137 327	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) IDA/OSD R&M Study Bibliography		5. TYPE OF REPORT & PERIOD COVERED Final July 1982 - August 1983
		6. PERFORMING ORG. REPORT NUMBER IDA Record Document D-18
7. AUTHOR(s) compiled by Anthea M. DeVaughan		8. CONTRACT OR GRANT NUMBER(s) MDA 903 79 C 0018
9. PERFORMING ORGANIZATION NAME AND ADDRESS Institute for Defense Analyses 1801 N. Beauregard Street Alexandria, VA 22311		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS Task T-2-126
11. CONTROLLING OFFICE NAME AND ADDRESS Office of the Assistant Secretary of Defense (MRA&L), The Pentagon Washington, D.C. 20301		12. REPORT DATE August 1983
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office) DoD-IDA Management Office 1801 N. Beauregard Street Alexandria, VA 22311		13. NUMBER OF PAGES 187
		15. SECURITY CLASS. (of this report) Unclassified
		15a. DECLASSIFICATION/DOWNGRADING SCHEDULE N/A
16. DISTRIBUTION STATEMENT (of this Report)  Approved for public release; distribution unlimited.		
17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)  None		
18. SUPPLEMENTARY NOTES  N/A		
19. KEY WORDS (Continue on reverse side if necessary and identify by block number) Reliability and Maintainability, Readiness, R&M document bibliography, IDA/OSD R&M Study		
20. ABSTRACT (Continue on reverse side if necessary and identify by block number) This document is comprised of three sections: a subject list of the Reliability and Maintainability Study documents, a numerical list of the same documents in order of acquisition, and a list of documents used during the 1981 Defense Science Board Summer Study. The bibliography lists more than 850 documents used as source or reference material during the course of the IDA/OSD Reliability and Maintainability Study, conducted during the period from July 1982 to August 1983.		

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August 1983



INSTITUTE FOR DEFENSE ANALYSES  
SCIENCE AND TECHNOLOGY DIVISION  
1801 North Beauregard Street  
Alexandria, Virginia 22311

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Task T-2-126

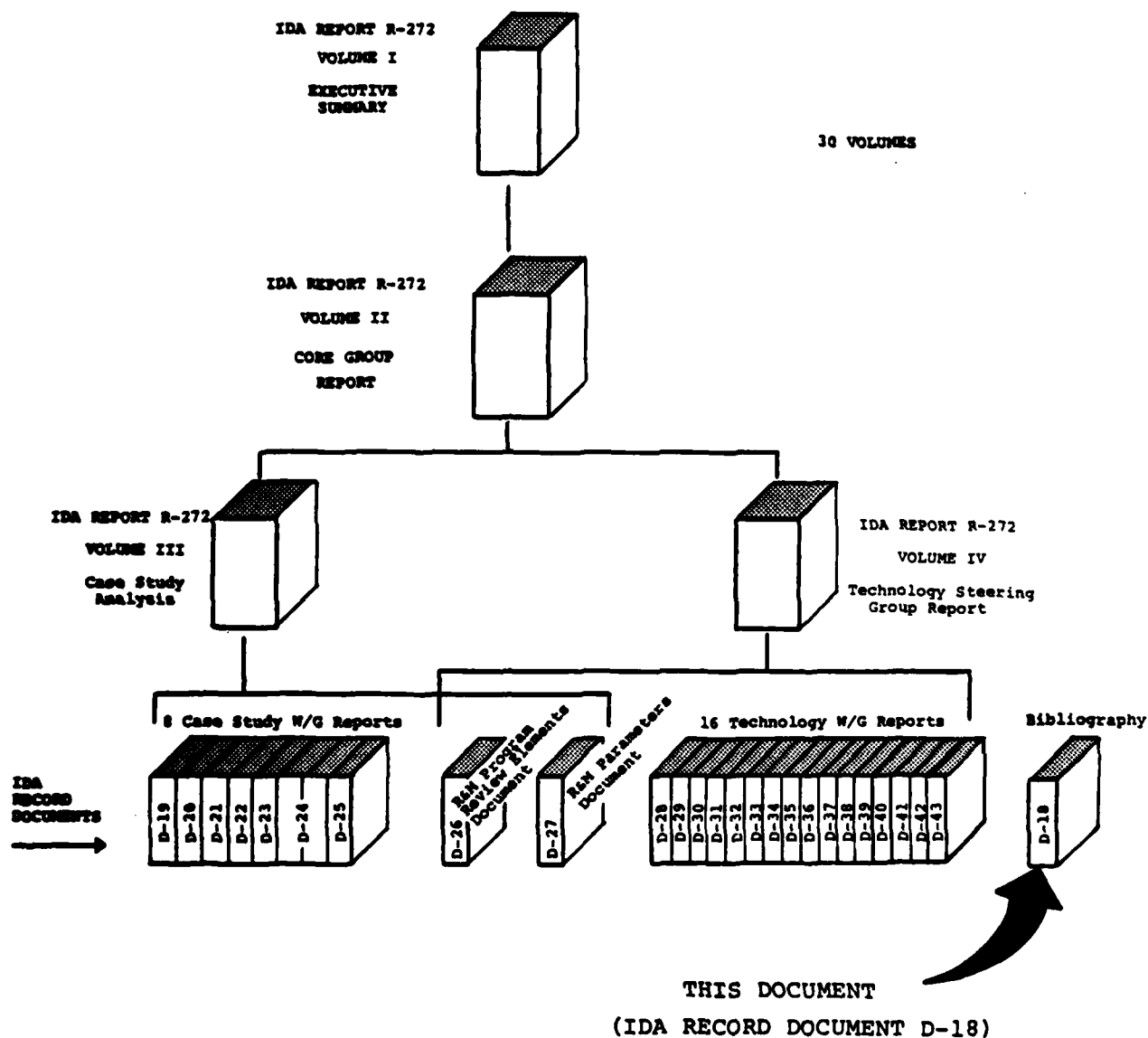
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# RELIABILITY AND MAINTAINABILITY STUDY

## — REPORT STRUCTURE —



## PREFACE

As a result of the 1981 Defense Science Board Summer Study on Operational Readiness, Task Order T-2-126 was generated to look at potential steps toward improving the Material Readiness Posture of DoD (Short Title: R&M Study). This task order was structured to address the improvement of R&M and readiness through innovative program structuring and applications of new and advancing technology. Volume I summarizes the total study activity. Volume II integrates analysis relative to Volume III, program structuring aspects, and Volume IV, new and advancing technology aspects.

The objective of this study as defined by the task order is:

"Identify and provide support for high payoff actions which the DoD can take to improve the military system design, development and support process so as to provide quantum improvement in R&M and readiness through innovative uses of advancing technology and program structure."

The scope of this study as defined by the task order is:

To (1) identify high-payoff areas where the DoD could improve current system design, development program structure and system support policies, with the objective of enhancing peacetime availability of major weapons systems and the potential to make a rapid transition to high wartime activity rates, to sustain such rates and to do so with the most economical use of scarce resources possible, (2) assess the impact of advancing technology on the recommended approaches and guidelines, and (3) evaluate the potential and recommend strategies that might result in quantum increases in R&M or readiness through innovative uses of advancing technology.

The approach taken for the study was focused on producing meaningful implementable recommendations substantiated by quantitative data with implementation plans and vehicles to be provided where practical. To accomplish this, emphasis was placed upon the elucidation and integration of the expert knowledge and experience of engineers, developers, managers, testers and users involved with the complete acquisition cycle of weapons systems programs as well as upon supporting analysis. A search was conducted through major industrial companies, a director was selected and the following general plan was adopted.

#### General Study Plan

- Vol. III ● Select, analyze and review existing successful program
- Vol. IV ● Analyze and review related new and advanced technology
- Vol. II (● Analyze and integrate review results  
(● Develop, coordinate and refine new concepts
- Vol. I ● Present new concepts to DoD with implementation plan and recommendations for application.

The approach to implementing the plan was based on an executive council core group for organization, analysis, integration and continuity; making extensive use of working groups, heavy military and industry involvement and participation, and coordination and refinement through joint industry/service analysis and review. Overall study organization is shown in Fig. P-1.

The basic case study approach was to build a foundation for analysis and to analyze the front-end process of program structuring for ways to attain R&M, mature it, and improve it. Concurrency and resource implications were considered. Tools to be used to accomplish this were existing case study reports, new case studies conducted specifically to document quantitative data for cross-program analysis, and documents, presentations,

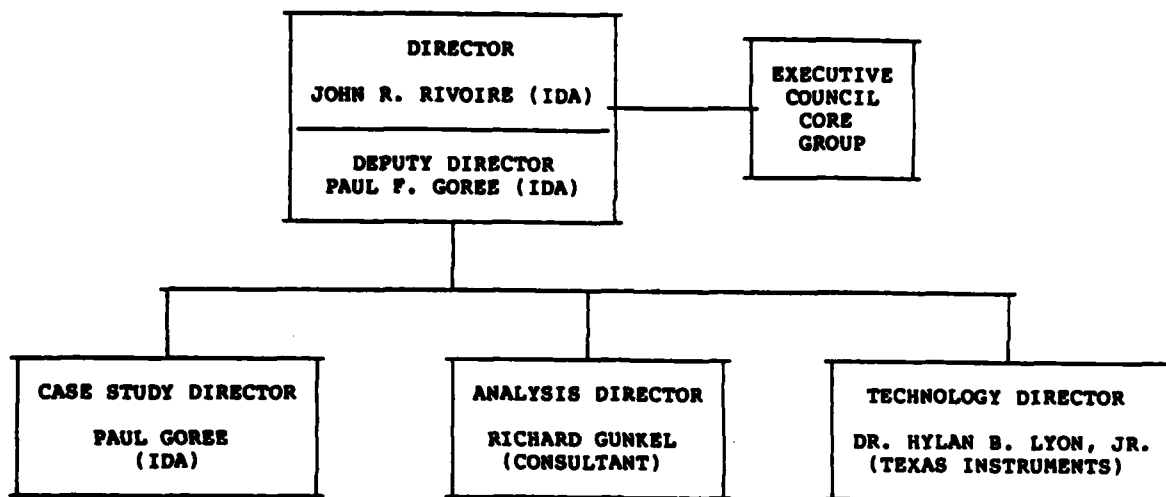


FIGURE P-1. Study Organization

and other available literature. In addition, focused studies for specific technology implications were conducted by individual technology working groups and documented in their respective reports. To accomplish the new case studies, the organization shown in Fig. P-2 was established.

In some areas where program documentation and records did not exist, the actual experience and judgement of those involved in the programs were captured in the case studies. Likewise, in the analysis process, the broad base of experience and judgement of the military/industry executive council members and other participants was vital to understanding and analyzing areas where specific detailed data were lacking.

This bibliography lists more than 850 documents used as source or reference material during the course of the study. The document is comprised of three sections: a subject list of the Reliability and Maintainability Study documents, a numerical list of the same documents in order of acquisition, and a list of documents used during the 1981 Defense Science Board Summer Study. Some of the documents listed are classified; however, titles of those documents are unclassified.

## R&M STUDY BIBLIOGRAPHY

This document is comprised of three sections.

The first section is a subject list of the R&M Study documents. This section has an index.

The second section is a numerical list of the same documents in order of acquisition. This also has an index.

The third section is the list of documents used during the 1981 Defense Science Board Summer Study.

R&M STUDY  
DOCUMENTS LIST (by Subject)  
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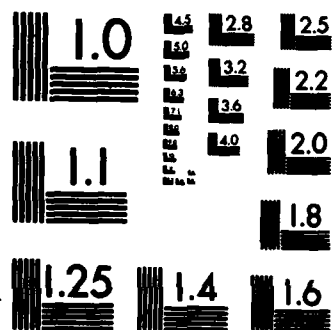
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